

In the Claims:

1. (Withdrawn) A thin wall singulation saw blade for cutting hard materials, comprising: a plated nickel matrix for encapsulating large diamonds and small diamonds in the same matrix, said nickel matrix having points of the large diamonds protruding from side walls beyond the small diamonds, and said small diamonds being encapsulated inside the thin wall matrix in a high-density concentration.
2. (Withdrawn) A thin wall singulation saw blade as set forth in claim 1 wherein said thin wall of said matrix is serpentine or corrugated in shape and having a depth of corrugation which is 3 to 10 times the thickness of said thin walls of said matrix.
3. (Withdrawn) A thin wall singulation saw blade as set forth in claim 2 wherein the cutting area of matrix material in said side walls exceeds the total thin wall transition area between the side walls so that the side walls wear slower than the area between the side walls.
4. (Withdrawn) A thin wall singulation saw blade as set forth in claim 3 wherein the saw blade becomes concave at the cutting edge and the center of the blade becomes recessed between two parallel cutting side wall blades.
5. (Withdrawn) A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes a large circular metal blank, and said matrix material is provided with an adapter portion for connecting the thin wall singulation saw blade to said circular metal blank.
6. (Withdrawn) A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes an endless flexible ribbon, and said matrix material is

provided with an adapter portion for connecting the thin wall singulation saw blade to said endless flexible blade.

7. (Withdrawn) A thin wall singulation saw blade as set forth in claim 2 wherein said saw blade further includes a drill rod or pipe, and said matrix material is provided with an adapter portion for connecting a cylindrical thin wall singulation blade to said drill rod or pipe.

8. (Withdrawn) A thin wall singulation saw blade for cutting hard materials, comprising: an inundating or corrugated shaped blade of substantially uniform thin wall thickness comprising a plated matrix material, large diamonds encapsulated in the thin walls and having small points or protrusions extending from the thin walls on both sides, small diamonds in the thin walls between and around said large diamonds, said small diamonds being encapsulated in higher density by volume than said large diamonds, and the depth of said inundations being greater than the thickness of said thin wall by a ratio of greater than three to one.

9. (Withdrawn) The method of making a thin wall singulation saw blade, comprising the steps of: providing a mandrel having a corrugated shape, plating a uniform thin wall of matrix metal in the presence of large diamonds, initially plating enough matrix metal to entrap and hold the large diamonds in place, substituting small diamonds for large diamonds, plating and encapsulating the small diamonds in the matrix material, ceasing plating of said matrix metal before points or protrusions of the large diamonds are covered, and removing said thin wall corrugated shaped singulation saw blade from said mandrel with points of the large diamonds exposed and protruding through said thin walls.

10. (Withdrawn) The method as set forth in claim 9 wherein the step of plating a uniform thin wall of matrix metal comprises the step of limiting the uniform thickness wall to one third to one tenth of the depth of the corrugated shape.

11. (Withdrawn) The method as set forth in claim 9 which further includes the step of initially plating a copper layer in the presence of diamonds in the range of 50 to 80 microns, and plating the copper layer to a thickness of 5 to 15 microns.

12. (Withdrawn) The method as set forth in claim 11 wherein the step of plating and encapsulating matrix metal comprises plating nickel in the presence of diamonds in the range of 3 to 18 microns, and plating a nickel layer having a thickness less than said large diamonds.

13. (Withdrawn) The method as set forth in claim 9 wherein the step of plating a uniform thick wall of matrix metal comprises the step of plating a corrugated annular ring saw blade for use in a flanged clamping hub.

14. (Withdrawn) The method as set forth in claim 13 which further includes cooling the side walls of said corrugated saw blade with water when cutting.

15. (Withdrawn) The method as set forth in claim 9 which further includes the step of providing an attachment tab or flange on said thin wall saw blade, and attaching said thin wall saw blade to a carrier or support.

16. (Withdrawn) The method as set forth in claim 15 wherein the step of attaching said thin wall saw blade to a carrier comprises attaching the flange to a hub, disc, rod or flexible blade.

17 (Currently Amended) A ~~thin-wall singulation~~ saw blade for cutting hard materials comprising:

- (a) a ~~plated~~ matrix for encapsulating large abrasive particle diamonds and small abrasive particles diamonds in the matrix;
- (b) said small abrasive particles diamonds being encapsulated inside the ~~thin wall~~-matrix in a high-density concentration;
- (c) the ~~thin wall singulation~~-saw blade being corrugated with substantially uniform thickness and comprising raised surfaces and lowered surfaces;
- (d) the lowered surfaces being parallel to, and space laterally and longitudinally of, the raised surfaces; and
- (e) transition portions connecting the raised surfaces and the lowered surfaces.

18 (Currently Amended) A ~~thin wall singulation~~-saw blade as claimed in claim 17, wherein the transition portions are at an angle to the raised surfaces and the lowered surfaces.

19 (Currently Amended) A ~~thin wall singulation~~-saw blade as claimed in claim ~~18~~9, wherein the angle is 45 degrees.

20 (Currently Amended) A ~~thin wall singulation~~-saw blade as claimed in claim 17, wherein the raised portions and the lowered portions are substantially flat.

21 (Currently Amended) A ~~thin wall singulation~~-saw blade as claimed in claim ~~17~~3, wherein the small abrasive particles are a different material than the large abrasive particles~~saw blade has a concave at the cutting edge and the center of the blade is recessed between two parallel cutting side blades.~~

22 (Currently Amended) A ~~thin wall singulation~~-saw blade for cutting hard materials, comprising:

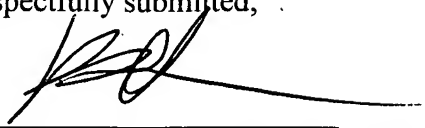
- (a) a corrugated shaped blade of substantially uniform thickness comprising a ~~plated~~ matrix material;
- (b) large abrasive particles ~~diamonds~~ encapsulated in the ~~thin~~ matrix material;
- (c) small abrasive particles ~~diamonds~~ in the matrix material between and around said large abrasive particles ~~diamonds~~;
- (d) said small abrasive particles ~~diamonds~~ being encapsulated in higher density by volume than said large abrasive particles ~~diamonds~~;
- (e) the corrugated shaped blade comprising raised surfaces and lowered surfaces parallel to, and spaced laterally and longitudinally of, the raised surfaces;
- (f) transition portions connecting the raised surfaces and the lowered surfaces;  
and
- (g) the depth of said corrugations being greater than the thickness of said ~~thin~~ wall by a ratio of greater than three to one.

23. (Withdrawn) A method of making a thin wall singulation saw blade,  
comprising:

- (a) providing a mandrel having a corrugated shape;
- (b) plating a uniform thin wall of matrix metal in the presence of large diamonds;
- (c) initially plating enough matrix metal to entrap and hold the large diamonds in place;
- (d) substituting small diamonds for large diamonds;

- (e) plating and encapsulating the small diamonds in the matrix material;
- (f) ceasing plating of said matrix material; and
- (g) removing said thin wall corrugated shaped singulation saw blade from said mandrel.

Respectfully submitted, .



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On July 19, 2005

By: 